



## FIGHTING CHANGE WITH CHANGE: A PROCESS FOR RE-ENGINEERING AN ENTERPRISE

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### ABSTRACT

Many organisations have realised that continuous change is a prerequisite to success. The problem however, is that 70% of change initiatives that are launched by organisations fail to deliver the benefits they were intended to provide [1]. The aim of this study is to solve this very serious and common problem by developing a practical and easy to follow enterprise engineering process that any commercial organisation can use to successfully implement radical change.

## 1. INTRODUCTION

The majority of organisations currently in existence operate in an environment that is ever-changing. In such a dynamic environment an organisation's future profitability and growth relies heavily on its ability to continuously, effectively and efficiently transform/re-engineer itself [3]. Luckily, many organisations have realised that change is necessary. The problem however is that 70% of the change initiatives that are launched by organisations fail to deliver the benefits they were intended to provide [1]. There are only two possible reasons why this is happening. Either organisations launch the wrong kinds of change initiatives given the type of situation they are in or they ineffectively manage and execute the change initiatives they decide to launch.

In an attempt to help organisations successfully manage and execute the right kind of change initiatives a plethora of different business transformation methods, tools and techniques have been developed by a variety of experts. Using any one of these methods, tools and techniques individually can potentially improve the success rate of an organisation's change initiatives. However, using the right set of transformation methods, tools and techniques as part of an integrated and structured enterprise engineering process is significantly more effective [6]. In the literature that has been reviewed hardly any information could be obtained regarding enterprise engineering processes and the transformation methods, tools and techniques that they consist of. The objective of this study is to bridge this research gap by developing an enterprise engineering process that a commercial organisation of any size can use to successfully transform itself.

The approach that is being followed to achieve the objective of this study consists of four activities. The first activity is reviewing literature related to enterprise engineering in order to identify the steps that should form part of the enterprise engineering process and determine their sequence. The second activity is researching the various methods, tools and techniques that can be used when performing each step. The purpose of this research is to determine how each of the enterprise engineering process steps should be executed as well as who should be involved. The next activity is developing a questionnaire and interviewing experts in the field of enterprise engineering in order to validate the technical correctness of the process. The final activity is conducting a case study in order to validate the process from a practical perspective. Activity one and two has already been successfully executed and activity three and four are currently in progress. The outputs of each of these activities are described and discussed in the sections that follow.

## 2. PROCESS STEP IDENTIFICATION

No organisation is able to operate completely independently. An organisation always operates within a unique environment called its external environment. Within an organisation's external environment various forces exist over which it has no control. These forces however present an organisation with certain opportunities as well as threats. When an organisation decides to re-engineer itself it should do so in a way that will allow it to capitalise on and counter these opportunities and threats [4]. However, the opportunities and threats presented by the forces within an organisation's external environment are not the only factors influencing the way in which it needs to re-engineer itself. Each organisation follows a unique "approach" to delivering value to its customers. This "approach" is called its business model and an organisation will always possess certain strengths and weaknesses surrounding its business model when it is compared to those of its competitors. When an organisation re-engineers itself it needs to do so in a way that will allow it to exploit these strengths and improve these weaknesses [7]. This of course means that when an organisation decides to re-engineer itself it first needs to identify the opportunities and threats within its external environment as well as the

strengths and weaknesses surrounding its business model. Identifying these opportunities and threats is done by conducting an external environment analysis. Identifying these strengths and weaknesses on the other hand is done by conducting a competitive analysis. The first step in the enterprise engineering process is therefore conducting an external environment- and competitive analysis.

Merely identifying the opportunities and threats that the forces within an organisation's external environment present it as well as the strengths and weaknesses that it possesses surrounding its business model does not add a lot of value. An organisation also needs to decide what actions it is going to take in order to capitalise on the opportunities, counter the threats, exploit its strengths and improve its weaknesses [8]. In other words, an organisation needs to formulate a strategy. The second step in the enterprise engineering process is therefore strategy formulation.

Very often after an organisation has formulated its strategy its first instinct is to immediately start executing it. Ironically, this is the exact reason why so many organisations fail to successfully execute their strategy. As mentioned previously each organisation has a unique "approach" to delivering value to its customers which is called its business model. However, underpinning/supporting an organisation's unique business model is its business architecture. An organisation's business architecture consists of the business processes that it executes as well as its organisation structure and performance measurement system. Strategy execution always requires an organisation to change its business model and/or business architecture. However, before an organisation can do this it needs to clearly understand exactly what it needs to change these two components to. In other words, before an organisation can start changing its business model and business architecture it needs to know what their end-state should be. The best way for an organisation to determine what its business model and business architecture end-states should be is by developing a business model design [2] and a business architecture design [10] that depicts the end-states. The third step in the enterprise engineering process is therefore business model- and business architecture design.

Once an organisation has a clear picture of its business model and business architecture end-states the only thing left to do is physically implement the new designs. This is the part of enterprise engineering process that is by far the most resource intensive, time consuming and likely to fail. An organisation should therefore not attempt to entirely implement the new business model and business architecture designs at once. An organisation should rather systematically implement the new designs through a series of transformation projects so that the implementation is more manageable. When an organisation follows this approach however, it is extremely important that the transformation projects are effectively managed individually and as a group [9]. Otherwise, an organisation runs the risk of never actually fully implementing its new business model and business architecture designs. The fourth and final step of the enterprise engineering process is therefore project- and project portfolio management.

### **3. HOW TO EXECUTE THE PROCESS**

#### **3.1 Step 1: External environment- and competitive analysis**

##### **3.1.1 *External environment analysis***

A variety of different opinions exist regarding the different forces that an organisation's external environment consists of. However, after combining the various opinions regarding this matter it was found that essentially an organisation's external environment consists of the following five forces:

- Legislation and regulations applicable to the organisation
- Economic climate of the regions within which the organisation currently operates
- Technology applicable to the organisation
- Social and cultural traits of the regions within which the organisation currently operates
- The industry within which the organisation currently operates

In order to identify the opportunities and threats that these forces present an organisation it first needs to research the fields surrounding each of these forces. The best information sources for an organisation to use when conducting this research are the following:

- relevant individuals within an organisation
- experts in the field
- environmental scanning consultants
- print media sources like newspapers and magazines
- broadcast media sources like television and radio
- electronic media sources like online databases, podcasts and websites

Examples of the types of information that an organisation should be looking for when researching each of the external environment forces are listed below.

Types of information that an organisation should be looking for regarding legislation and regulations:

- Newly implemented legislation and industry regulations that are applicable to it
- Changes to current legislation and industry regulations that are applicable to it
- Current legislative and regulatory gaps that are applicable to it

Types of information that an organisation should be looking for regarding technology:

- Existing disruptive or beneficial technologies that are applicable to it
- New/emerging disruptive or beneficial technologies that are applicable to it

Types of information that an organisation should be looking for regarding the economy:

- Economic climate of the regions within which it operates (eg. inflation-, exchange-, interest- and economic growth rates)
- Economic trends of the regions within which it operates (eg. globalisation)
- State of public infrastructure and services of the regions within which it operates

Types of information that an organisation should be looking for regarding society:

- Health issues of the regions within which it operates
- Population skill & education levels of the regions within which it operates
- Demographics of the regions within which it operates
- Changes regarding societal tastes, values and standards of living of the regions within which it operates
- Cultural, labour and lifestyle trends of the regions within which it operates

Types of information that an organisation should be looking for regarding the industry:

- Trends within the industry that it forms part of
- Demand vs. supply within the industry that it forms part of

Once an organisation has researched each of the external environment forces it needs to carefully analyse the information that has been gathered. The purpose of this analysis is firstly for an organisation to identify any factors surrounding the forces within its external environment that have a positive and/or negative impact on it. Secondly, the purpose of this analysis is to determine exactly what the positive and/or negative impacts are. In

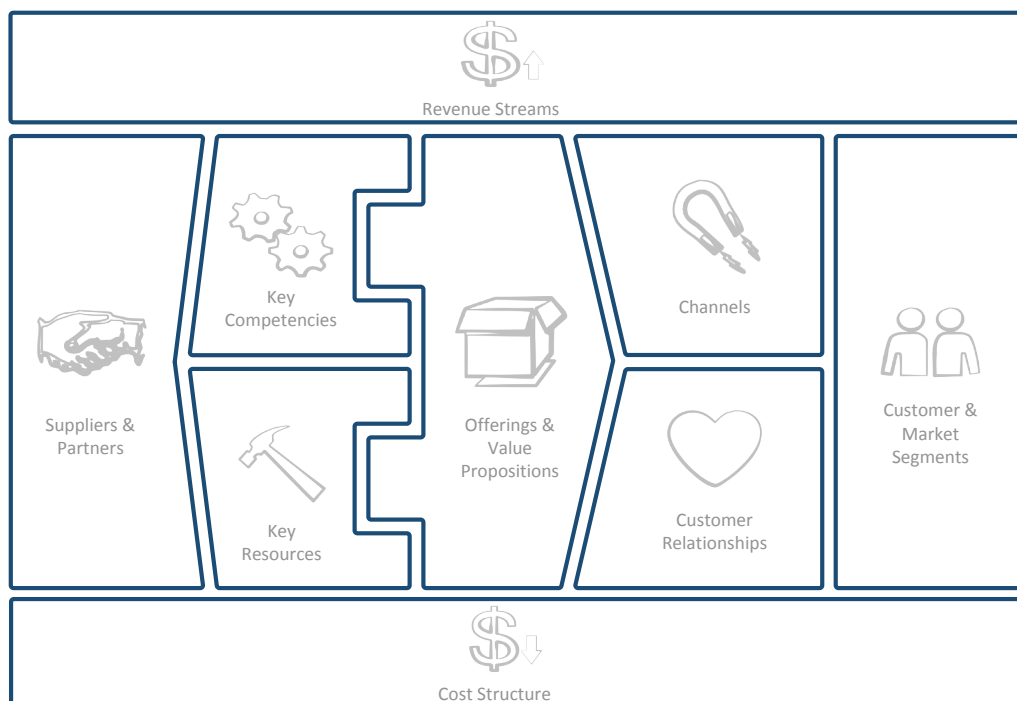
other words, identify the opportunities and threats. Very often these factors and their impacts are fairly obvious and easy to identify. However, it is very important that an organisation also looks for those factors and implications that are not so obvious since, in many cases, these are the most significant.

### 3.1.2 Competitive analysis

In order to identify the strengths and weaknesses that it possesses surrounding its business model an organisation first needs to understand what its current business model is. Although one would expect an organisation to know exactly what its business model is, this is not often the case. Also, not many people agree as to what exactly a business model is and what it consists of. After conducting the necessary research however it was found that an organisation's business model consists of the following building blocks:

- The key suppliers & partners it utilises
- The key competencies that it possesses
- The key resources that it uses
- The offerings and value propositions that it provides its customers
- The channels it utilises to make its offerings and value proposition available to its customers
- The relationships it cultivates with its customers
- The customer and market segments it targets
- The revenue streams it generates
- The cost structure of its operations

An organisation needs to describe each of these building blocks in order to develop an understanding of its current business model. The business model template illustrated in Figure 1 below can be used to facilitate this activity.



**Figure 1: Business model template**  
Adapted from (Osterwalder & Pigneur, 2010)

Once an organisation has described its current business model it is ready to identify the strengths and weaknesses that it possesses. In the case of an organisation a strength is a business model attribute, it possesses, which provides it with an advantage over its competitors and a weakness is business model attribute, it possesses, which puts it at a disadvantage to its competitors. This means that in order to identify the strengths and weaknesses that it possesses an organisation needs to compare its business model to those of its competitors. An organisation does this by asking itself a series of questions regarding each of its business model building blocks and then finding the answers. These questions are listed below.

#### Questions related to partners and suppliers:

- What benefits does the organisation enjoy as a result of the partners and suppliers that it currently utilises which its competitors don't?
- What problems does the organisation experience as a result of the partners and suppliers that it currently utilises which its competitors don't?
- What benefits is the organisation missing out on by not currently procuring from some or other potential supplier?
- What benefits is the organisation missing out on by not currently having a partnership with some or other potential partner?

#### Questions related to key competencies:

- What beneficial characteristics does the organisation possess surrounding its key competencies which its competitors don't?
- What negative characteristics does the organisation possess surrounding its key competencies which its competitors don't?
- What key competencies does the organisation currently possess which its competitors don't?
- What beneficial key competencies should the organisation possess which it currently does not?

#### Questions related to key resources:

- What benefits does the organisation obtain from the key resources that it currently utilises which its competitors don't?
- What difficulties does the organisation experience from the key resources that it currently utilises which its competitors don't?
- What key resources does the organisation currently possess which its competitors don't?
- What key resources should the organisation possess which it currently does not?

#### Questions related to offerings and value propositions:

- What characteristics make the organisation's offerings and value propositions better than those of its competitors?
- What characteristics make the organisation's offerings and value propositions worse than those of its competitors?
- What value propositions does the organisation currently provide its customers which its competitors don't?
- What value propositions should the organisation provide its customers which it currently does not?

#### Questions related to channels:

- What advantages does the organisation obtain from the channels that it currently utilises which its competitors don't?

- What disadvantages does the organisation experience from the channels that it currently utilises which its competitors don't?
- What channels does the organisation currently utilise which its competitors don't?
- What channels should the organisation utilise which it currently does not?

Questions related to customer relationships:

- In what ways are the organisation's current customer relationships better than those of its competitors?
- In what ways are the organisation's current customer relationships poorer than those of its competitors?
- What new types of relationships should the organisation have with its customers which it currently does not?

Questions related to customer and market segments:

- What advantages does the organisation gain from the customer and market segments that it currently targets which its competitors don't?
- What disadvantages does the organisation experience from the customer and market segments that it currently targets which its competitors don't?
- What customer and market segments do the organisation target which its competitors don't?
- What customer and market segments should the organisation target which it currently does not?

Questions related to cost structure:

- In what ways does the organisation have a lower cost structure than its competitors?
- In what ways does the organisation have a higher cost structure than its competitors?
- What should the organisation be doing to lower its cost structure which it is not?

Questions related to revenue streams:

- Which of the organisation's revenue streams are more lucrative than those of its competitors?
- Which of the organisation's revenue streams are less lucrative than those of its competitors?
- What revenue streams should the organisation generate which it currently does not?

### 3.2 Step 2: Strategy formulation

As mentioned previously an organisation formulates a strategy because it needs to decide how it is going to:

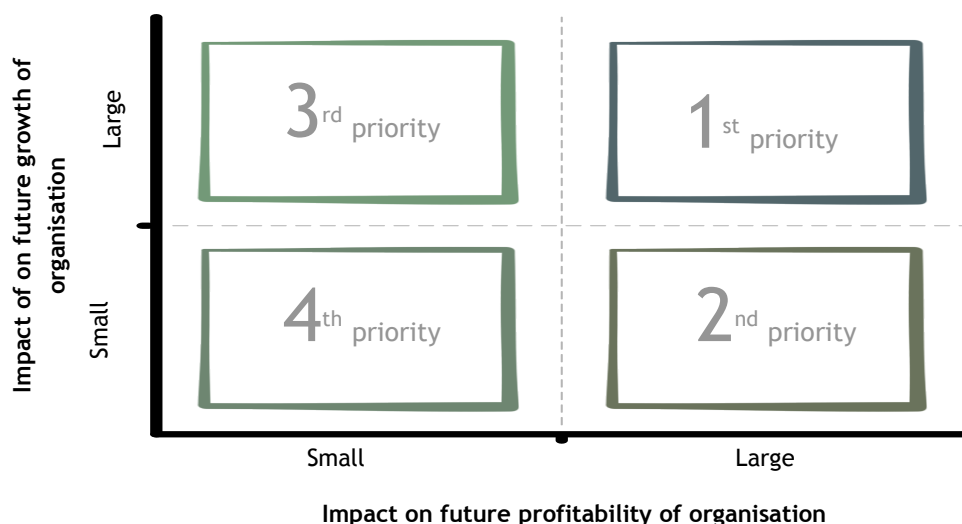
- capitalise on the opportunities presented by the forces within its external environment
- counter the threats presented by the forces within its external environment
- exploit the strengths that it possesses surrounding its business model
- improve the weaknesses that it possesses surrounding its business model

However, all of these strengths, weaknesses, opportunities and threats are not equally important. Also, in most cases, an organisation will not be able to capitalise on all of the opportunities, counter all the threats, exploit all of its strengths and improve all of its weaknesses at once, because it would not have the required resources at its disposal. It is



therefore important that an organisation prioritises its strengths, weaknesses, opportunities and threats.

When an organisation re-engineers itself its aim is always to maximise its profitability and growth in the short as well as the long term. An organisation should therefore prioritise its strengths, weaknesses, opportunities and threats based on the magnitude of their impact on its future profitability and growth. A graph like the one illustrated in Figure 2 below can be used to do this. The strengths, weaknesses, opportunities and threats that fall within the top right quadrant of such a graph are classified as priority one since they significantly affect the future profitability as well as growth of an organisation. Those that fall within the bottom right quadrant are classified as priority two since they significantly affect future profitability, but only modestly affect future growth. Those that fall within the top left quadrant are classified as priority three since they significantly affect future growth, but only modestly affect future profitability. Lastly, those that fall within the bottom left quadrant are classified as priority four since they only modestly affect future profitability as well as growth.



**Figure 2: Opportunity and threat prioritisation**

Once an organisation has prioritised its strengths, weaknesses, opportunities and threats it needs to identify the set of strengths, weaknesses, opportunities and threats that it believes it should respond to. This set should of course consist of as many “priority one” strengths, weaknesses, opportunities and threats as is practically and economically feasible. Having done this an organisation is now ready to formulate its strategy. The first thing an organisation needs to do when formulating its strategy is evaluate the set of strengths, weaknesses, opportunities and threats that it believes it should respond to and then determine how it should position itself within the industry that it forms part of. In other words, an organisation needs to select a strategic position. In most cases the strategic position that an organisation selects will be based on one or more of the following three generic strategic positions [5]:

- Low cost leadership
- Value proposition innovation (eg. quality, differentiation, branding etc.)
- Customer intimacy

A strategic position that is based purely on low cost leadership means an organisation is minimising the cost of providing its value propositions to its customers to a level that is



substantially below those of competitors. To make a low cost leadership strategic position work, an organisation needs to find ways of decreasing its operating expenses in ways that are difficult to replicate. A strategic position that is based purely on value proposition innovation means an organisation provides very distinctive value propositions that competitors are not able to easily imitate or replicate. Examples of value proposition innovations include quality, additional features, ease of use, branding etc. To make a strategic position around value proposition innovation work an organisation's value propositions need to not only be distinctive, but also deliver the type of value that will positively influence the purchasing behaviour of its targeted customers. A strategic position that is based purely on customer intimacy means an organisation builds intimate relationships with its targeted customers and fulfils their unique needs. An organisation does this by for example offering personalised service and customised solutions, by interacting with targeted customers through personal contact and by continuously making a conscious effort to better understand them.

The second thing an organisation needs to do when formulating its strategy is set itself strategic objectives that, if achieved, will ensure that it exploits, improves, capitalises on and counters the strengths, weaknesses, opportunities and threats within the set that it believes it should respond to. When an organisation does this it very important that the strategic objectives:

- are achievable
- are measurable (yardstick)
- have an allocated timeframe
- are aligned with its desired strategic position

If an organisation's strategic objectives are not achievable then it will stand almost no chance of ever achieving the strategic objectives. If an organisation's strategic objectives are not measurable and do not have an allocated timeframe then it will find it extremely difficult to measure progress during the execution of the strategic objectives and it will never be able to determine whether or not its strategic objective have been successfully achieved. If an organisation's strategic objectives are not aligned with its desired strategic position it will not be able to create a unique identity that will provide it with a competitive advantage.

### **3.3 Step 3: Business model and business architecture design**

#### **3.3.1 Business model design**

When an organisation designs its business model it simply means that it describes the business model that it needs to implement in order for it to attain its desired strategic position and achieve its strategic objectives. In other words, an organisation describes its business model end-state. In order for an organisation to do this it firstly needs to analyse its strategy. The purpose of this analysis is to determine exactly how each of its current business model building blocks, described in Step 1 of the enterprise engineering process, should change in order for it to attain its desired strategic position and achieve its strategic objectives.

Once an organisation understands in what ways its current business model building blocks need to change it uses this information to populate the business model template illustrated in Figure 1 with the following information:

- The suppliers & partners building block is populated by listing the most important suppliers and partners that need to be utilised by the organisation in future
- The key competencies block is populated by listing the most important actions that need to be performed by the organisation in future

- The key resources block is populated by listing the most important tangible and/or intangible assets that will be required by the organisation in future
- The offerings and value propositions block is populated by listing the products and/or services that the organisation needs to offer its customers in future
- The channels block is populated by listing the future means by which the organisation needs to reach its customers
- The customer relationships block is populated by describing the types of relationships that the organisation needs to have with its customers in future
- The customer and market segments block is populated by listing the groups of people and/or organisations that the organisation needs to deliver its value propositions to in future
- The revenue streams block is populated by listing the types of future revenues that the organisation needs to generate from delivering its value propositions to its customers
- The cost structure block is populated by listing the most important costs that will be incurred as part of the organisation's operations in future

### **3.3.2 Business architecture design**

When an organisation designs its business architecture it means that it describes the business architecture that it needs to implement in order for it to attain its desired strategic position and achieve its strategic objectives. The first thing an organisation needs to do when designing its business architecture is identify the list of value streams that it needs to execute in future in order for it to attain its desired strategic position and achieve its strategic objectives. A value stream is a logical grouping of business processes that together aim to achieve a common value stream goal. A value stream is not however the same as a functional unit/department. In fact, various different functional units/departments are typically involved in a value stream. Most organisations do not group their business processes around value streams. Instead, they design and group their business processes around functional units/departments like marketing, sales, human resources etc. The problem with designing and grouping business processes around functional units/departments is that it creates functional silos within an organisation. These functional silos end up operating extremely effectively and efficiently, but the organisation as a whole ends up operating extremely ineffectively and inefficiently [6]. By rather designing and grouping its business processes around value streams an organisation creates a collaborative working environment that spans across functional units/departments.

Once an organisation has determined what value streams it needs to execute in order for it to attain its desired strategic position and achieve its strategic objectives it needs to determine what business processes should form part of each of these value streams to ensure that each value stream goal is achieved. After this has been done an organisation needs to determine:

- which of these business processes it is not currently performing
- which of these business processes it is currently performing
- which of the business processes that it is currently performing are ineffective and/or misaligned with its strategy
- which of the business processes that it is currently performing are effective and aligned with its strategy

The business processes that an organisation identified as being ineffective and/or misaligned with its strategy then need to be redesigned and the ones that it is currently not performing need to be designed from scratch. Designing or redesigning these business

processes means describing the way in which they should be performed in future. An organisation does this by developing a business process model for each of these processes.

Many different business process modelling techniques exist. However, after conducting the necessary research it was found that for an organisation to accurately describe the way in which its business processes need to be performed in future the business process models that it develops need to illustrate the following:

- The activities that are performed within a process
- The sequence within which these activities are performed
- The roles that are responsible for performing each of the activities
- The physical and/or information inputs to each activity
- The physical and/or information outputs of each activity
- The system/technology that is used to perform each activity

Having listed the value streams that it needs to execute in future, identified the business processes that form part of each of the value streams and designed and redesigned the necessary business processes an organisation is now ready to design its organisation structure. An organisation does this by developing an organisation structure model that illustrates the following:

- how it should be divided into functional units/departments
- the roles that need to be performed within each functional unit/department
- reporting lines between the roles
- job position(s) that should perform each role
- employees that should fill each job position

When an organisation designs its organisation structure it needs to take certain design influences into consideration. The most important design influence that it needs to take into consideration is its value streams and business processes. An organisation's employees are responsible for executing its value streams and business processes. If they are not structured in a way that makes it possible for them to execute the value streams and business processes then they will not be successfully executed. The other design influences that an organisation needs to take into consideration are for example its business model, key people, locality, customers, business infrastructure and legislation.

Having an organisation structure in place that enables the successful execution of its value streams and business process does not necessarily mean that an organisation's employees will successfully execute its value streams and business process. In order to ensure that an organisation's employees successfully execute its value streams and business processes it also needs to implement a performance measurement system that drives the required behaviour. The final task that needs to be completed when an organisation designs its business architecture is designing such a performance measurement system. In order to do this an organisation needs to evaluate its newly designed organisation structure, value streams and business processes and determine what kind of behaviour it requires from each of the various roles performed within it. Once this has been done an organisation needs to define the performance metrics that it needs to measure in order to determine how well the employees performing each role are exhibiting the desired behaviour. When doing this it is very important that the performance metrics for each role are kept to a minimum and that they are very easy to measure. A performance metric is of no use if it can't be measured and if a large number of metrics exist per role then too much effort needs to go into measuring performance. Having determined the kind of behaviour required from each role and defined the performance metrics, an organisation is ready to define its incentive scheme. An incentive scheme describes how employees are rewarded financially and by other means for exhibiting the kind of behaviour required from the roles they perform. Without defining this final component of the performance measurement

system an organisation will find it very difficult to motivate its employees exhibit the kind of behaviour required from the roles they perform.

### **3.4 Step 4: Project and project portfolio management**

#### **3.4.1 Project portfolio management**

Project portfolio management, in the context of this enterprise engineering process, means managing the portfolio of transformation projects needed to implement an organisation's business model and business architecture designs. In order to do this an organisation first needs to identify the portfolio of transformation projects that needs to be executed in order to implement its business model and business architecture designs. An organisation does this by performing a kind of gap analysis. During this analysis an organisation compares its current business model and business architecture with its redesigned business model and business architecture. By doing this an organisation is able to identify the "gaps" between its current business model and business architecture and its redesigned business model and business architecture. Identifying these "gaps" enables an organisation to determine what transformation projects need to be executed in order to bridge them.

Once an organisation has identified the portfolio of transformation projects needed to implement its business model and business architecture designs it can start to actually manage the portfolio. Essentially this means:

- deciding when to initiate each of the projects within the portfolio
- identifying and resolving dependencies and overlaps between projects within the portfolio
- halting or cancelling projects within the portfolio if required
- changing the scope of the projects within the portfolio if required
- monitoring the overall performance of the projects within the portfolio

#### **3.4.2 Project management**

Project management, in the context of this enterprise engineering process, means planning and controlling the execution of each of the transformation projects within the portfolio described above. In the literature that was reviewed many different project management methods exist. However, most of these methods are not very useful since they were designed for managing large scale projects that are significantly more complex than the transformation projects needed to implement an organisation's business model and business architecture designs. The basic/core elements of these project management methods however can be used when managing transformation projects.

When an organisation plans a transformation project the first thing it needs to do is define the scope of the project. An organisation does this by describing:

- the aim of the project
- the benefits to be obtained from successfully executing the project
- the deliverables to be generated by the project as well as each deliverable's resource requirements, estimated cost, planned start and end dates and acceptance criteria
- the stakeholders involved in or affected by the project, their roles in the project and their contact details

The second thing an organisation needs to do when planning a transformation project is develop the actual project plan. The project plan should describe the tasks that need to be performed in order to successfully execute the project, the expected start and end

dates of each of these tasks, the dependencies between the tasks and the resources responsible for the execution of each of the tasks.

Once an organisation has properly planned a transformation project it can start executing it according to the project plan. However, to ensure that this is done successfully an organisation needs to control the execution of the transformation project. Controlling a transformation means ensuring that it delivers exactly what it is supposed to within the planned cost and schedule parameters. An organisation does this through effective project risk- and problem management. Managing project risks is done by performing the following activities:

- Anticipating events that will have a negative impact on the success of a project if they were to take place
- Describing each of these events
- Determining which of a project's deliverables could be impacted by each of the events
- Describing the impact that each of the events could have on a project's deliverables
- Rating each of the events in terms of their likelihood of occurrence and impact magnitude
- Responding to these events by implementing mitigating controls

Managing problems is done by performing the following activities:

- Measuring project performance in terms of cost, schedule and quality
- Identifying the causes of poor project performance
- Implementing corrective measures to improve project performance if possible
- Regularly communicating with project stakeholders in order to identify existing issues that have a negative impact on the success of a project
- Resolving identified issues if possible

#### **4. WHO IS INVOLVED IN THE PROCESS**

##### **4.1 Who is involved in conducting an external environment and business model analysis?**

The members of an organisation's management team are typically much more outward focused than most other employees. They are also more adept at determining how the external environment influences the organisation. The responsibility for conducting an external environment analysis therefore lies with an organisation's management team.

The best source of information regarding the strengths and weaknesses that an organisation possesses surrounding each of its business model building blocks is the employees within the organisation itself. Conducting a competitive analysis should therefore be a collaborative effort that involves as many employees as possible from each of the functional areas within an organisation. However, it is very important that an organisation involves its marketing, sales and product development teams when conducting a competitive analysis. These teams have the most insight regarding the business models of the organisation's competitors and will therefore most likely provide the most valuable input.

The tasks involved in conducting an external environment and competitive analysis are performed much more effectively and efficiently when they are facilitated by an experienced facilitator. An organisation should therefore have someone facilitate the external environment and competitive analysis. The facilitator could be a member of an organisation's management team or an enterprise engineering consultant.

## **4.2 Who is involved in formulating a strategy?**

Formulating the strategy of an organisation should be a collaborative effort that involves as many employees from a variety of different functional areas, layers and demographic profiles within an organisation as possible. However, it is very important that as many marketing, sales and product development representatives be involved since they will most likely be responsible for executing the strategy once it has been formulated. By having as many of an organisation's employees as possible contribute to formulating its strategy it ensures that a large number of creative and innovative ideas are gathered. By having the individuals responsible for executing the strategy involved in its formulation eliminates the need for change management and ensures that the strategy has a greater chance of being successfully executed.

As with conducting an external environment and competitive analysis, the tasks involved in formulating a strategy are performed much more effectively and efficiently when they are facilitated by an experienced facilitator. An organisation should therefore also have a facilitator facilitate the formulation of its strategy. The facilitator could be a member of an organisation's management team or an enterprise engineering consultant.

## **4.3 Who is involved in business model and business architecture design?**

An organisation's management team has the necessary management experience to determine what kind of business model it needs to implement in order to successfully execute its strategy. Business model design is therefore the responsibility of an organisation's management team.

Various different groups of people within an organisation are involved in designing its business architecture. Its management team is responsible for identifying the value streams that need to be implemented in order for it to execute its strategy as well as for determining what business processes should form part of each of these value streams. The reason is that an organisation's management team have the necessary knowledge to make these decisions. Designing the business processes currently not performed and redesigning the ineffective and strategically misaligned business processes on the other hand is the responsibility of the employees involved in these business processes. By making these employees responsible for doing this a sense of ownership is created amongst the employees performing the business processes and the need for change management is eliminated. Designing its organisation structure is the responsibility of an organisation's management team. An organisation's management team have the necessary management experience to know what kind of organisation structure will enable the successful execution of its value streams and business processes. It is however extremely important that an organisation's management team involves the individuals that will be affected by the new structure as much as possible. Designing an organisation's performance measurement system is mainly the responsibility of its management team. However, it is very important that an organisation obtains input regarding the performance metrics of each role from the employees that perform each role. This way an organisation's management team will ensure that realistic performance expectations are set.

The tasks involved in redesigning an organisation's business model and business architecture are performed much more effectively and efficiently when they are facilitated by an experienced facilitator. It is therefore valuable to have a facilitator involved in this step. The facilitator could be a member of an organisation's management team or an enterprise engineering consultant.



#### **4.4 Who is involved in project and project portfolio management?**

An organisation's management team is ultimately responsible for any re-engineering effort and it also has the necessary authority make the decisions related to portfolio management. Portfolio management is therefore the responsibility of an organisation's management team.

Project management on the other hand requires a specific set of skills. Managing a transformation projects can therefore be the responsibility of any individual within an organisation that has project management skills or a project management consultant.

### **5. TECHNICAL VALIDATION OF THE PROCESS**

The enterprise engineering process described above needs to be technically sound and based on the correct theoretical principles in order for this study to achieve its objective. Part of this study is therefore validating whether or not this is the case. This will be done by developing a questionnaire and then conducting interviews with the following five enterprise engineering experts:

- Expert 1: CEO of an enterprise engineering consulting firm
- Expert 2: Lead enterprise architect at a large manufacturing organisation
- Expert 3: Strategy manager of a division within a large manufacturing organisation
- Expert 4: Enterprise engineering consultant
- Expert 5: Enterprise engineering consultant

The questionnaire is currently in the process of being developed, but the expert interviews are yet to be conducted.

### **6. PRACTICAL VALIDATION OF THE PROCESS**

As mentioned previously the enterprise engineering process described above needs to be technically sound and based on the correct theoretical principles in order for this study to achieve its objective. However, these are not the only characteristics that the enterprise engineering process needs to possess in order for this study to achieve its objective. It is also vitally important that the enterprise engineering process is practical. Part of this study is therefore validating the enterprise engineering process from a practical perspective. This is currently being done by conducting a case study at an organisation that supplies paper based packaging products to the retail and industrial markets within South Africa. For various reasons this organisation prefers to remain unnamed and will therefore be referred to as SA Packaging. Thus far SA Packaging has successfully executed step one and two of the enterprise engineering process, step three is currently in progress and step four is yet to be initiated.

### **7. CONCLUSION**

Most organisations currently in existence operate in an environment that is very dynamic. In a dynamic environment the only way that an organisation can thrive is by continuously re-engineering itself. The majority of organisations however struggle to do this. This study delivers a solution to this problem. The output of this study is an enterprise engineering process that an organisation of any size can use to successfully transform itself. In other words, this study provides organisations with the ability to fight change the only way that is effective: with change.

Currently the enterprise engineering process is being applied in practice at a leading retail and industrial packaging supplier within South Africa in order to validate its practical



feasibility. The preliminary results are very positive since most of the organisation's employees involved in the process feel that it is easy to understand and use. Although this is the case the process is of no use if it is not technically accurate. In order to validate the technical correctness of the process a questionnaire is currently being developed. This questionnaire will be used to gather the opinions of various experts in the enterprise engineering field regarding the technical correctness of the process. It is believed that the outcome of these expert interviews will be as positive as the outcome of the practical application of the process.

## 8. REFERENCES

- [1] Blanchard, K. 2010. *Leading at a higher level*, FT Prezz.
- [2] Casadesus-Masanell, R., & Ricart, J. E. 2010. From Strategy to Business Models and onto Tactics, *Long Range Planning* , 43, pp 195-215.
- [3] Hammer, M., & Champy, J. 2001. *Reengineering the corporation: A manifesto for business revolution*, Nicholas Brealy.
- [4] Ilbury, C., & Sunter, C. 2005. *Games foxes play*, NB Publishers.
- [5] Luecke, R. 2005. *Harvard Business Essentials: Strategy*, Harvard Business School Publishing.
- [6] Martin, J. 1995. *The Great Transition: Using the Seven Disciplines of Enterprise Engineering to Align People, Technology and Strategy*, AMACOM.
- [7] Osterwalder, A., & Pigneur, Y. 2010. *Business Model Generation*, John Wiley & Sons.
- [8] Thompson, J., & Martin, F. 2005. *Strategic Management: Awareness and Change*, 5th Edition, Cengage Learning EMEA.
- [9] Torres, J. W. 2008. *Enterprise Engineering: Transformation Right the First Time*, Tate.
- [10] Whittle, R., & Myrick, C. B. 2005. *Enterprise Business Architecture: The Formal Link between Strategy and Results*, Auerbach.